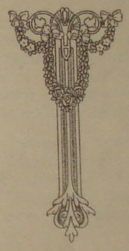
Fischer
CHICAGO, ILL.

Directions for operating

STYLE "E" COMBINATION

Physician's Electrical Cabinet



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PREAMBLE "E."

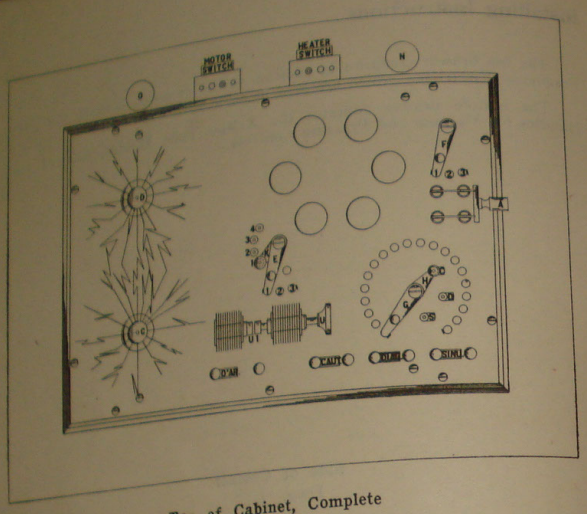
The contents of this small booklet were intended to assist the student in the Electro-Therapeutical world, in obtaining the best possible results from the style "E" Physicians Cabinet.

The treatment of disease by means of electric current has become as firmly established as with drugs or other methods, and today the various currents are known and appreciated for their value, in hundreds of conditions. In earlier days, one of the chief disadvantages of the use of the different modalities was the lack of apparatus sufficiently powerful to produce the most profound physiological effects.

Style "E" is a thoroughly efficient, complete, result producing appliance. X-Ray—D'Arsonval—Oudin—High Frequency—Ozone—Tankless Compressed Air—Nebulizers—Fluid Heater—Air Heater—Vibrators—Biers' Hyperemia by Vacuum—Cautery, Diagnostic and Sinusoidal Circuits, each and every one has a field of its own; and attachments for their proper use are included with the outfit.

These instructions were carefully compiled for the style "E" Generator, and, as extreme care was exercised in simplifying, you should be able to derive excellent results by observing them as written.

Please read them carefully, and when in trouble consult the proper page for advice before registering a complaint.

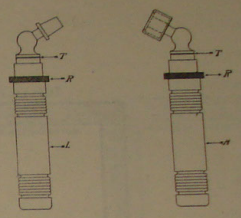


Top of Cabinet, Complete
Drawing "E 1"

Press White Button on **Heater** Switch at back of top of Cabinet. This illuminates the bottles with a red glow, and after a very short period the contained liquids will become warmed to Body Temperature. The object being to prevent the resulting chill of a cold spray upon the sensitive Tissue or Wound under treatment.

Pressure

To obtain Pressure to operate Nebulizer, Atomizer, etc., press White Button on Switch marked **Motor**. Set pointer on Handle "N" to farthest point on Plate marked **Pressure**. Attach Spray Bottles to Taper end on Pressure Handle "L" on right side of Cabinet. To operate Control on handle to obtain various degrees of Pressure, see cut "H." Knurled Collar "R" is turned to right to gradually increase Power and to left to decrease. To relieve Pressure instantly, pull Collar "R" down. **Always make it a point** to have **Valve** in Pressure Handle **Open** when **starting Motor.**



Pressure and Vacuum Handles
Drawing "H"

Vacuum

To obtain Vacuum for use with the various Cupping appliances, start Motor same as for Pressure. Set pointer on button "O" to farthest point marked Vacuum.

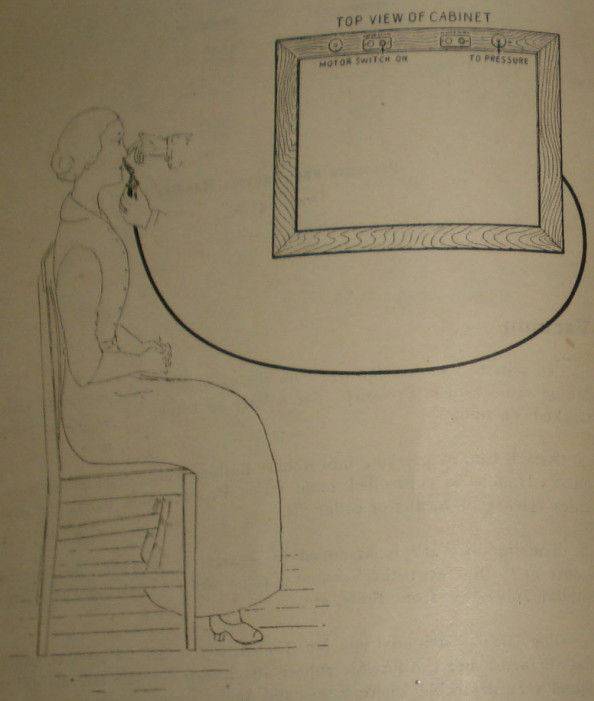
Attach Cup by pressing into Rubber Bushing with a slight turning movement. Handle is controlled same as on Pressure Side, having the same quick release by means of collar "R."

The handle "M" is arranged to separate at point "T," for inserting Gauze or Cotton when the Vacuum is to be used for extracting Pus or other similar substance from Boils, etc.

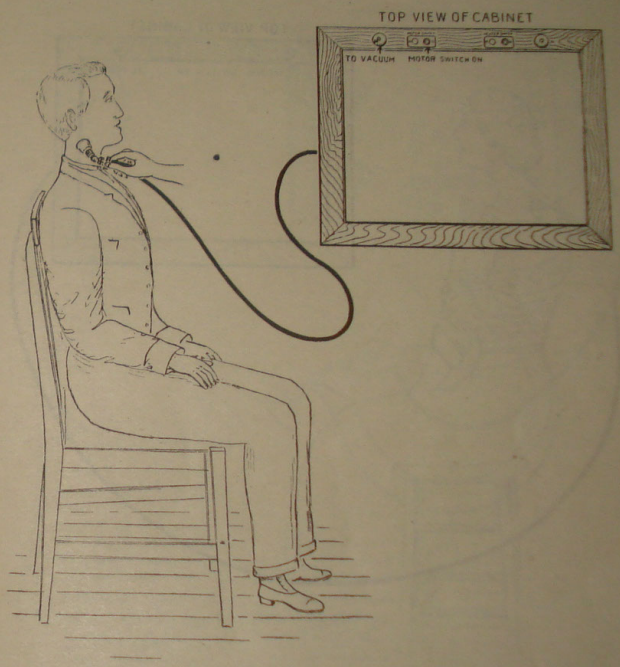
The Glass Vacuum Cups No. 1500 A, B & C are for use over smooth flat surfaces, and the flexible rubber attachments No. 1555 and 1556 will be found very desirable where Edges and Angles are encountered.

Any device gotten up by Dr. Bier can be attached to the Vacuum Handle the same way.

No mistake can be made in making connections with either the Air Handle or the Vacuum Handle, as vacuum attachments will not fit on Pressure side, and vice-versa.



Eustachean Tube Opener
Drawing "P"



Vacuum Application

Vacuum and Vibration

By turning button "O" until indicator points to farthest point toward side marked Vibration, you will find that although you still have some sucking effect, it pulsates rapidly. By turning this same button to right or left, any degree of Vibration or Vacuum may be obtained.

Pneumatic Vibration

Slip either surface vibratode on to Taper end of handle "L." Turn button "N" so that the indicator points toward Vibration. Start Motor as before, and adjust length and strength of stroke by means of collar "R."

When using Cavity Vibratodes a little care should be exercised to see that the three small holes near the end where applicator is fastened to handle, are not all closed at one time. These are merely vent holes to allow some of the air to escape. Should more pressure be desired to inflate the vibratodes to a greater extent, gradually turn button "N" back toward pressure side until the right amount of expansion is obtained.

Hot Air

To obtain heated air, connect Taper end of handle "L" to tapered socket "A" in Air Heater Diagram leaving the Binding Posts in any convenient position. Now connect the heavy maroon Cautery Cords to posts "B" and "B1," and to **Cautery** posts on cabinet.

Start motor and allow air to pass through heater. Open points "U1" (dwg. "E1") by turning screw "U" to left two full turns. Set lever "H" on point marked "C," and lever "G" on point "F," or off point. Throw in switch "A," and gradually increase heat by moving lever "G" to right. Point "12" may seem necessary to generate enough heat at the start, but you will find that a sufficient temperature may be maintained on point "7" or "8."

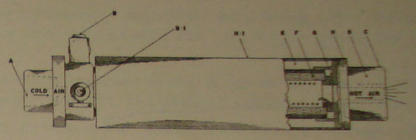
The air spreading attachment No. 1572 is arranged to screw into heater at point "D" (dwg. "H1") and is provided with outlet holes on the sides only, to prevent a concentrating of the heat which would result, should the air be allowed to pass directly through. You will find, as a result, that when rubber cup No. 1555 or 1556 is slipped on, the outermost edge will get just as warm as the center. When through **shut off Current first,** then shut off air.

You will readily see that with the above method, the Heat as well as the Volume of Air is under positive control at all times.

Continued contraction and expansion caused by the repeated heating and cooling, is apt to loosen the unit "F." When this occurs, and heater fails to work, tighten same by screwing fast Tube "H."

Our endeavor in designing this heater has been to make it as small as is consistent with the life of a coil necessary to furnish the required amount of air at the heat required. Both quantity and heat of air are independently adjusted to any degree. Every heating element is given a thorough test and if the instructions above are carried out, the coil will give service for a long period of time. New units can be purchased at 75 cents each. Postpaid.

No other heating element on the market can be so readily renewed.



Air Heater
Drawing "H 1"

A—Socket for Air connection.
Band B1—Binding posts for Electrical connections.
C—Support for Air Spreading Attachment, and Rubber Cups.
D and E—Air Chambers to keep outer walls cool.
F—Heating Element.
G—Contact Point.
H—Knurled edge for use when removing Heating Element.
H I—Outer Chamber cover.

Motor and Pump

The paramount feature of any revolving or oscillary piece of mechanism is to keep it lubricated.

In the Thompson Plaster Pump this matter becomes a simple one for the operator to attend to, as the entire Pumping System is lubricated from one oil cup conveniently situated.

Grease cup No. 16 should be filled with grease supplied with the machine. To fill, unscrew the knurled cap and screw back the leather piston close to the cap. Fill cup and re-insert piston, screwing cap tight. A half turn or so of cross handle will feed grease to all parts of pump.

We suggest a turn of feed screw about once for every hour's run.

The motor needs attention only after 6 months' use, and where outfit is not used excessively once per year will suffice.

TO OIL MOTOR. It is necessary to lift cabinet on two chairs, leaving an open space large enough to operate a screw driver.

Take off plate No. 44.

Now remove the cups No. 42 with large screw driver, and after cleaning in Benzine, refill and replace, being careful to get wick in center so that it will reach the shaft.

Should the operator prefer to oil motor without lifting the cabinet, this can be done by using a good motor oil and putting a few drops in the oil holes on top and on each end of motor shaft.

What are High Frequency Currents?

This question is made clear in a graphical way by comparison with water.

In our demonstration we will assume that the voltage will be the water pressure at the Hydrant. When we increase the pressure we increase the amount of water we can draw due to the speed with which the water flows.

The voltage obtained from style "E" combination is 100,000 volts, or approximately 1,000 times the voltage of the average electric lamp used. If you were to touch both terminals of a lamp socket, you would receive a severe muscular shock, though the voltage of the current would be only 1-1,000 of what you would receive from style "E" coil.

Let us see what 1,000 times the pressure of the water at the hydrant would mean. Upon opening the faucet a stream of water would travel at such speed that anything brought into contact with it would be struck as with a blow from a sword.

This same condition would prevail if electrical currents of 100,000 volts were permitted to enter the human body. It would be as a sword thrust that would cleave from head to heel.

Now let us take this tremendous pressure and force water through an atomizer with hundreds of thousands of tiny holes. The result would be a mist of spray, that would penetrate the entire surrounding atmosphere. The most delicate of flowers could be refreshed and could thrive when treated in conditions produced in this manner.

In the generation of High Frequency currents, an Electrical Condenser is connected in the Circuit, acting as does the atomizer in separating the flow into minute impulses of such rapid succession that no sensation affects the nervous centers. Likewise there is no muscular contraction.

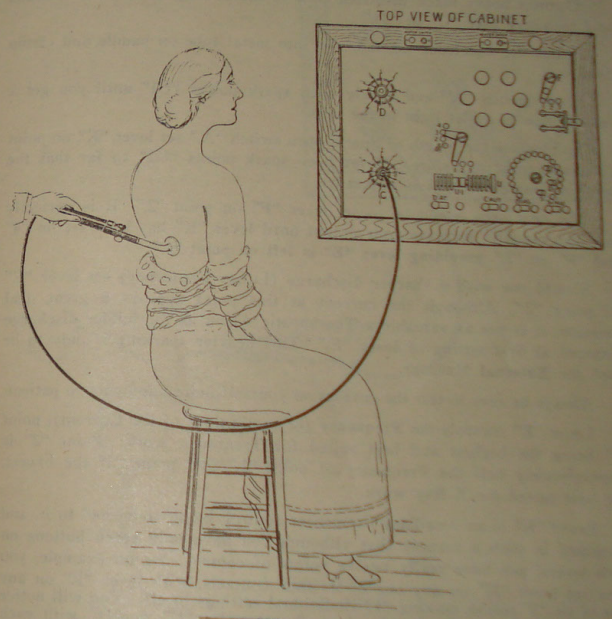
The human nervous system can detect oscillations in an electrical current up to 10,000 per second, and as the frequency increases, the sensation decreases. Style "E" has a frequency of over One-Half Million per second.

The operator has therefore at his command a tremendously powerful agent, from which more benefit can be derived in a few seconds' treatment than with hours with the one time Battery Outfit.

There is no quackery or uncertainty about it, and it is not put forward as a "Cure-All;" but, being a thorough cell massage and peculiarly healthy stimulant, its intelligent use is a wonderful aid in restoring the normal equilibrium wherever it has been disturbed, and the physical condition impaired from almost any cause, and used as directed, with ordinary discretion, its results are almost universally beneficial and never harmful.

Any physician once initiated into the results obtained from the use of High Frequency, high potential violet ray currents such as generated by the style "E," finds their use absolutely indispensable.

The term High Potential is merely indicative of High Pressure or Voltage, the same running in various treatment machines as high as from 10,000 to 100,000 Volts.



High Frequency (Violet Ray)
Drawing "H-F"

High Frequency

To obtain this valuable current from style "E" for use with the various Glass Electrodes; set lever "E" on point "1," "F" on point "1," and "K" on point "1," (see dwg. "E1"). Close interrupter point "U1" by turning screw "U" gently to right.

Connect heavy black insulated cord to Metal ring on insulated handle, and to active pole "C" or "D."

Select the Electrode desired, slip into metal tube on handle and clamp firmly.

Close switch "A" and slowly open spark points "U1" until you get a smooth flow of violet light in the tube.

To increase the length of Spark, open switch "A," set lever "K" on point "2," and repeat as before. **Never** open spark points "U1" so far that the resulting current output is unsteady.

The next step would be to set lever "F" on point "2." It is perfectly safe to gradually increase your output until lever "K" has been set on "4" and "F" on "3," **providing lever "E" is left on point "1."**

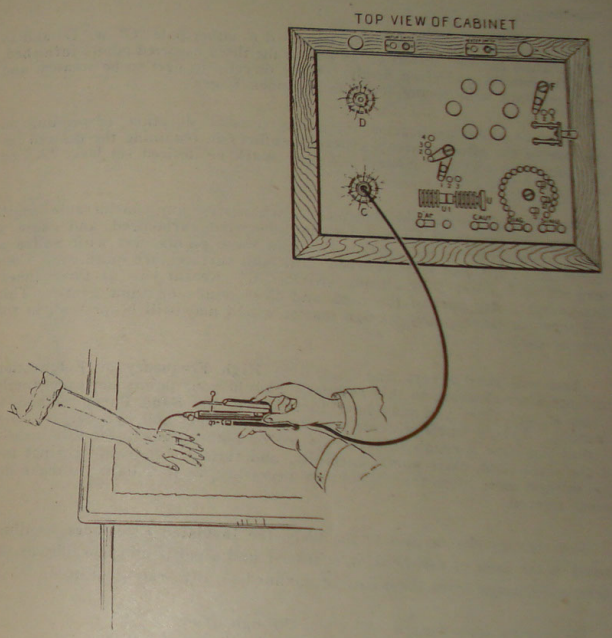
Should you wish a sharper discharge (Lower Frequency) set lever "E" on point "2." Although the current at this point appears a great deal stronger, it is not as valuable a Therapeutic Agent as the milder discharge obtained at first setting of lever "E." This heavier sparking is only to be used for **External** Massage.

Always be sure to test the current on yourself before applying to patient.

Lever "E" controls the **Frequency** (or oscillations of the Current), point "1" being the highest and best suited for Treatment work. Point "2" is approximately half the Frequency of point "1," and point "3" the lowest, but best suited for X-Ray work.

Lever "K" is an Auxiliary Condenser control, being connected to it, and arranged in such a manner that although you have only **seven** buttons on both levers, you have really **twelve** points of control. As an example, you may set lever "K" on any one of its four contacts, with lever "E" on any one of its "3" points, making "12" individual settings in all. You will notice a decided difference in length of sparks at poles "C" or "D" with each different setting of lever "K."

Lever "F" is the Rheostat, and controls the volume of current entering the transformer; point "1" being setting of greatest resistance and weakest output, and point "3" the strongest. Varying the settings of lever does not have a very great effect on the length of the sparks from "C" or "D" as it does not change the voltage to any great extent: its main object being Amperage control.



Fulguration
Dwg. "F"

Fulguration

Set levers "F," "K" and "E" on points "I." This treatment requires a very mild current, and it is necessary to keep spark points "UI" quite close together.

Connect the heavy black insulated cord to either pole "C" or "D" and to Fulguration handle. Insert either one of the three assorted points furnished, into the handle, and clasp firmly. Apply directly to part to be treated, and make contact with spring lever, using index finger.

Two or three applications of a few seconds' duration, (depending on the size of the affected area), generally suffices in obtaining the desired result with this method. Should a longer spark be desired set lever "K" on point "2."

After using the machine for heavy discharge for any considerable length of time, the points "UI" may become somewhat carbonized, and cause a slight irregularity in the spark. To clean these points, wet with **Saliva** a corner of a card, and slide between until both surfaces are quite wet. Then burn off with current by closing switch "A." Repeat two or three times, then insert a **dry** part of the card, and close points on same gently. This will serve to take up any foreign matter which may still be present, in the form of carbon.

You will note a very fine control of **High Frequency or Fulguration** currents after cleaning in this manner. Should your points get exceedingly rough at any time, you may have to resort to the **Sand Paper** method of cleaning. Take a small piece of very fine sand paper and fold back to back so that you have a rough surface exposed on both sides. Insert this instead of the plain card, close points carefully, and slowly withdraw. Do **not** use this method more often than absolutely necessary, as it is liable to make the points uneven.

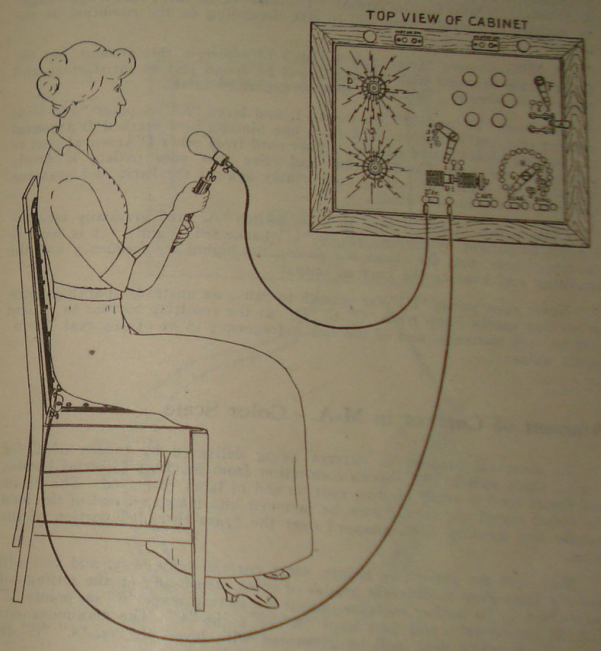
For treating the cavities of the body, the **Insulated Electrodes,** as illustrated in the back of this booklet, will be found almost indispensable, as the current discharge from them can be confined to any section desired.

Be sure to open Switch "A" when through using.

Do not touch the **Metal** parts of your cord or handle when in use.

Do not make or break connection with Active pole on machine before first cutting off current at switch "A."

Never turn on current when Active posts are out, or if either one should be broken.



D'Arsonval (Auto-Condensation)

Cautery

See that switch "A" is open. Open spark points "U1" about $\frac{1}{16}$ of an inch, by turning screw "U" to left about two turns. Set lever "G" on point "1," or **Off** point. Set lever "H" on point marked "C."

Connect heavy maroon cords to posts marked Cautery, and to Cautery Handle. Close transformer circuit with switch "A." The cautery handle has a switch for convenience in operating, and pressing the button closes the circuit to the knife. Although you have only "12" buttons in this circuit, you really have "36" points of control, as you may set your lever "G" on any one of its "12" buttons, and vary the current each time by means of lever "F." A light cherry red is the proper color for Cautery work.

If your knife does not heat when connected try some other circuit to make sure you have current entering the cabinet. Then look closely at levers "G" and "H" and see that they are making good contact on the buttons. Also see that the blades and contacts of switch "A" are clean, and fit snugly.

Your knife itself may even be at fault, the copper bars in which the platinum tips are held probably being jammed together in packing.

Care must be used not to advance lever "G" too far as you are apt to burn out your platinum knives.

Diagnostic Lamp

Set same as for **Cautery,** but have lever "H" on point marked "D." Connect tips of Diagnostic Lamp cords to posts marked **Diagnostic,** and bring the color of Filament to any degree of brightness you may desire. Care should be exercised same as for Cautery, to avoid going too far and burning out your lamp.

Any other lamp for diagnostic purposes can be used in the same manner, the regulation being fine enough, and the capacity ample; ranging from ½ Volt on point "1" to 12 Volts on point "16."

Sinusoidal

Set same as for Cautery, but have lever "H" on point marked "S."

Use light maroon cords and connect to metal handles and to posts marked **Sinusoidal.** Regulate the same as for Cautery by means of lever "G."

A moist pad or sponge electrode as illustrated can be used to advantage in many places where the round metal handle would be found rather inconvenient.

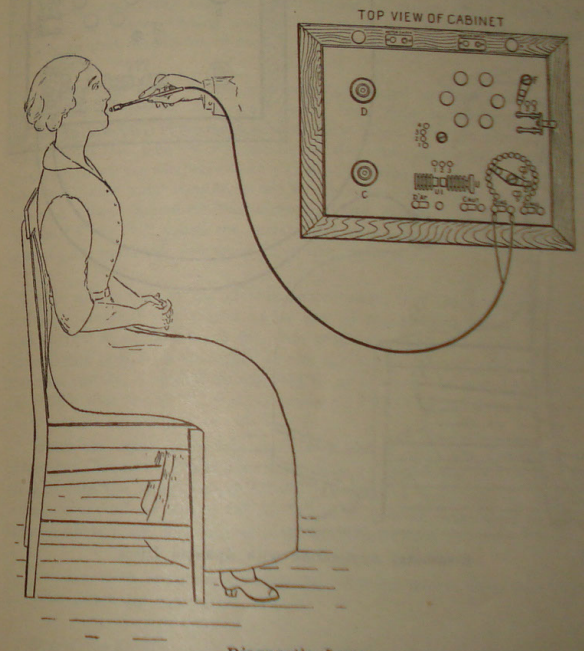
You will find, in following out the above, that when lever "H" is set for Cautery that you have "12" points of regulation; when set for Diagnostic, "16" points, and for Sinusoidal "20" points.

The settings of lever "K" and "E" have no bearing whatever on the workings of the Cautery, Diagnostic and Sinusoidal Circuits, being cut off therefrom by opening points "U1."

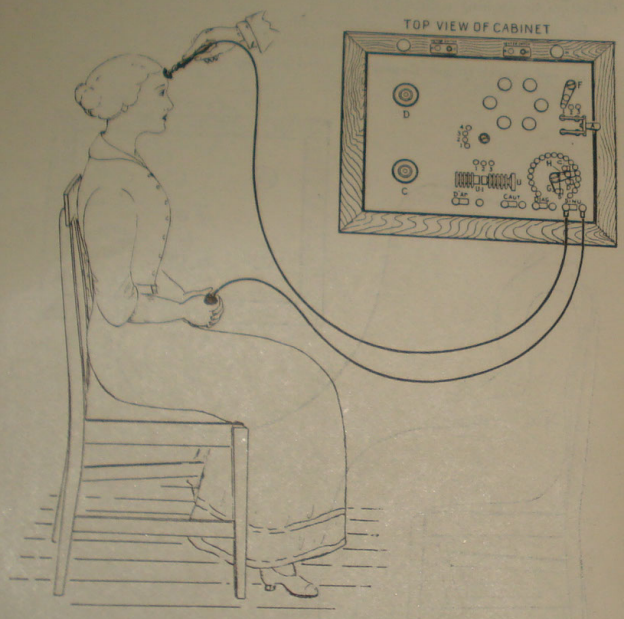
Do not let lever "G" stop between points.

Do not make connections with switch "A" closed.

Do not expect to get **Cautery** Circuit with lever "H" on point "D" or "S." and vica versa.



Diagnostic Lamp
Drawing "L"



Sinusoidal Application with Spongio Discs

Suggestions for correcting errors in operating Cautery, Diagnostic and Sinusoidal Circuits

If machine should apparently "Go Dead," that is, you are unable to obtain any current from it, first unscrew connecting plug from lamp socket, and try for current in same manner by inserting lamp. If the lamp fails to light, look for a burned out fuse in the cut-out box where the Electric current enters your building.

Should your lamp light up when trying as above, again connect the machine, but before closing switch "A," bend the small contacts together slightly so that the blades of switch fit in more snugly.

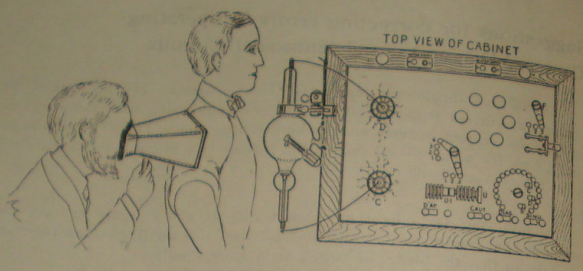
Should your knife fail to heat when connected to Cautery circuit, test for trouble as follows: Remove Cautery knife from handle, and set lever "G" on button "6." Short circuit with knife blade, or other piece of metal, across from one post on the handle to the other, and when making and breaking, observe whether there is any sparking. If no sparks can be seen, you know your trouble is not in the knife, but somewhere nearer the machine. Now disconnect the wires from the handle, and, still with lever "G" on "5" or "6," touch the metal cord tips together. Should you even now see no sparking, you must look still farther.

You will notice on the marble switchboard, that the small metal plate marked "Cautery" is clamped under one of the binding posts. Throw on your current again and touch the plate with one copper bar of the knife, and the opposite post with the other bar of the knife. Should even this fail to give you results, it should be reported to us at once. In making these tests BE SURE that levers "B" and "G" make GOOD CONTACT on the buttons.

Much the same procedure can be followed with the Diagnostic and Sinusoidal Circuits. When your lamp fails to illuminate, first be sure it is screwed into the small socket firmly. Or remove lamp entirely, and after setting lever "G" on button "4" or "5," touch side of brass shell on base of lamp to name plate, and end of lamp to opposite post.

Try also with metal lamp holder by shorting across from post to post, and also watch for sparking.

If ever the binding posts appear dead, with switch "A" closed and tested as above, report to us at once.



Fluoroscopy

X-Ray

Set lever "F" on point "3."

Set lever "K" on point "4."

Set lever "E" on point "3."

Close interrupter points "U1" as for High Frequency. Throw in switch "A" and gradually open points "U1" until you get a continuous flow of sparks between poles "C" and "D." The wider the space at "U1" the lower the frequency, and the heavier the flow of current. Do not open the points too wide, however, as doing so will cause an **uneven** discharge, and is to be avoided.

Now turn off current entirely, and connect X-Ray cords from poles "C" and "D" to ends of tube marked "L" and "M." The discharge being Bi-Polar, i. e., both posts equal, it makes no difference in results which post you connect to either terminal. It is advisable however to have the **live hemisphere** turned away from you when in use.

Close switch "A," and gradually open points "U1" until you get a steady green glow in the tube. If tube is operating properly the half directly in front of the Anode or target will light up with an apple green color, while the back half remains considerably darker.

To see this best, stand directly on side of tube and look through. A distinct hemisphere must be apparent. The more pronounced this hemisphere the better will be your results.

High, Medium and Low Vacuum Tubes

To determine just about how much penetration your tube has, observe carefully the sparking between poles "C" and "D."

A high vacuum tube (one of high penetration) will back up the full distance from "C" to "D"—5½ inches; a **medium** tube, of less penetration, but delivering rays of more **therapeutic** value—4 inches; while a comparatively **low** vacuum tube will not back up more than 2 or 3 inches. A low tube of this kind will generally show some white patches behind the Anode.

The reason for the above is the fact that the internal resistance of a high vacuum tube is very great; and the energy from the machine, instead of passing through, and producing X-Rays, will jump the less resisting air gap between the posts "C" and "D."

The more gas you allow into the tube, the less the internal resistance; the tube absorbs more of the current, and leaves less to leak off at the terminals.

A **hard** tube produces less X-Rays, but of more penetrating quality; suitable for heavy work.

A **medium** tube produces more X-Rays than a hard tube, but of less penetration, and is best suited for medium radiographic or fluoroscopic work such as foot, elbow, knee, etc.

A **soft** tube, of low vacuum, produces a great quantity of X-Rays, but of slight penetration. While this tube will make excellent radiographs of the hand, it should never be used for heavier work. This tube is, however, very **well suited** for **treatment purposes.**

Should your tube fail to glow properly, or sparks jump the full gap from "C" to "D" in making these tests, your tube is **too high** in vacuum, and must be reduced; or your spark points "U1" are too far apart.

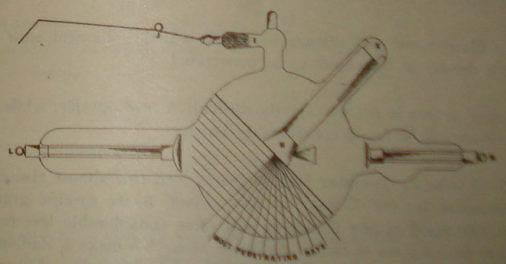


Diagram "X 2"

How to Reduce Vacuum

To reduce vacuum, open switch "A;" set lever "E" on "3;" "K" on "3" and "F" on "3." Bring down the small wire "J" leading from chamber "I" (on diagram "X 2") to about one-half inch from Cathode terminal "L."

This chamber "I" is filled with asbestos, treated with a chemical which is vaporized as a gas by the passage of the current: this same gas reducing the internal Electrical resistance. Adjust points "U1" until nearly closed, and snap in switch "A," one or twice; not more than a second or two at a time. Then raise wire "J" up about 5 inches, and try tube as before.

If you still do not obtain the desired hemisphere in the tube, repeat the reducing process. **Caution** *should be used not to overdo this, as you can repeat the operation any number of times, whereas if you allow too much gas into your tube, your only recourse is to send it back for re-exhaustion.*

Very often tubes are considered too high in Vacuum by the novice, and over-reduced, when the real trouble has been too great an opening at points "U1." These should be adjusted so that when tube is disconnected an even steady flow of sparks jump from "C" to "D," and when tube is in the circuit it illuminates with no spasmodic flickering lights, but with a steady glow.

You may easily determine this for yourself by trying a few times both with and without the tube. The best setting for average X-Ray work should be obtained by closing "U1" entirely, and then opening about ¼ turn of screw "U." For X-Ray treatment work good results may be obtained by setting lever "E" on point "2."

For Fluoroscopic or Radiographic work, a little judgment must be used as to the density of the object to be penetrated.

A stout patient is not necessarily difficult to radiograph; while a muscular person will be found considerably harder.

A good point to remember here is this: You can almost always gauge the opaqueness (to the X-Ray) of any object, by its specific gravity. A piece of pine wood of any thickness will offer considerable less resistance to the Ray than a piece of oak of the same size. To make a Radiograph of an ordinary woman's shoulder, will require less exposure than if your patient was a laborer, with hardened muscles.

Exposure Chart

Owing to the fact that so many factors enter into the determination of the proper lengths of exposures, the following schedule is only approximate. It is based on a medium weight patient, with lever "K" on point "4," lever "E" on point "3" and lever "F" on point "3," and using Paragon Plates.

Part to be Radiographed	Distance of Anode from Plate Inches	Thickness of Object Inches	Time of Exposure In Seconds
Hand	15	1¼	4
Wrist-Lat.	15	1½	6
Wrist Ant. Post	15	2½	8
Elbow	15	3½	10
Foot-Lat.	16	3	10
Foot Ant. Post	15	2½	10
Ankle-Lat.	17	3½	11
Ankle Ant. Post	17	4	12
Upper Arm	17	4	14
Knee	17	5	22
Shoulder	18	5½	25
Head-Lateral	18	6½	40
Head Ant. Post	18	8	60
Head of Femur	18	7½	55
Chest	18	8	45
Spine		8	60

For patients weighing over 150 pounds use a trifle longer exposure than above. For smaller patients shorten time.

For dental work on small films 18 seconds.

Using sand-bags for fracture work is advisable to hold the part quiet; and, as the slightest movement of the patient will blur the detail in the finished negative, it is important that the patient be made as comfortable as possible during the exposure.

Always bear in mind that a new tube must be treated with considerable more care than a seasoned one, as it is what is commonly called **green** and untrained. With proper use, that is, care taken not to overheat or over-reduce, your tube should be better at the end of a year's time than when new.

It is advisable to have two tubes on hand of different degree of vacuum, for different classes of work.

Your tubes will last longer when used alternately, and give better results; and should any accident befall one you always have one on hand for the emergency case.

Keep your plates in a cool dry place, standing boxes on edge if possible. Dampness, turpentine or oil odors, and heat are equally harmful.

Plate Protection

Do not depend on an ordinary wall for protection from the X-Ray. Either place your plates in a lead lined box (1-16 inch thick lead will do), or fifty feet from the tube.

Do not load plates into the envelopes in large quantities, unless they are to be used at once. When possible the plates should not be loaded more than two days before you intend to expose them, as the paper has a tendency to fog the emulsion.

Dark Room

The room or space to be used as your dark room must be Absolutely Dark, except for the ruby lamp. It must have no cracks, holes or curtains through which even the faintest trace of light can enter, as X-Ray plates are as sensitive as any photographic plate to white light, and fog easily.

Running water should be had if possible. Keep your trays absolutely clean; rinse them thoroughly both before and after using. Do not use a Hypo Fixing tray for Developing; mark your trays and **NEVER** change.

Your Dark Room equipment should consist of at least two trays, ruby lamp, glass stoppered bottles for developer and hypo, glass funnel, glass graduate, drying rack and lead lined plate box.

Loading Plates

It will be found very convenient, saving time and trouble, if you will arrange your envelopes before turning out the light. They should be alternated, first laying down an orange and then a black envelope, with the flaps toward you, and the seamed side up. In this way there can be no question as to which envelope was picked up in the dark, nor any delays caused by inserting the plate into the orange envelope first, which of course will not fit into a black one.

By passing the ball of the thumb lightly over the corner of the plate the film side can be selected, in the dark, it having a fine matte surface in contrast to the other, or clear glass side.

Care should be exercised in this as the glass will cut off some of the ray if plate is loaded wrong and the image will appear reversed.

Place the plate with the film side against the smooth blank side of the envelope; close the flap, and insert flap first into the orange envelope in the same manner, leaving the seamed sides of both turned the same way.

When this rule is followed, you can always be sure the film or sensitive side of the plate is turned toward the smooth side of both envelopes; and you will never have trouble taking the radiograph through the glass accidentally, if the printed side of the envelope is always turned away from the patient.

Another advantage of this is that if the tube happens to be a trifle soft in vacuum, the mucilage, or four thicknesses of paper at the seam, will not show on the finished plate.

Caution!

Do not overlook the fact that after your plates are loaded in the envelopes they are just as sensitive as before, and should not be allowed in the same room as the tube when testing same, unless under lead cover.

Developing - Washing - Fixing

To get best results, use some good standard formula. (Paragon [illegible] in packages has proven excellent), at a temperature between 65 and [illegible] grees Fahrenheit. Do not attempt to develop more than 5 or 6 plates [illegible] tray of solution. You may try this, and imagine you can develop [illegible] just as well as six, but on close examination you will find that the [illegible] were very inferior in appearance to the first.

If your plate has had sufficient exposure, it should grow denser [illegible] time of development increases.

Good diagnosis is as important as good radiographs. Learn to look for the unexpected and do not be a mere photographer. Textbooks and radiography do not always agree as to location and shape of parts, but a thorough knowledge of anatomy will assist greatly in focusing a tube, and knowing how the parts should look on a finished plate.

A good illuminating box covered on the inside with flat white paint is absolutely necessary for correct examination of plates.